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10/077,390

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David H. Jen

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09/21/2004

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EXAMINER

DAVIDSON, DAN

ART UNIT

PAPER NUMBER

2651

DATE MAILED: 09/21/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|------------------------------|--------------------------------------|-----------------------------------|--|
| Office Action Summary | Application No. 10/077,390 | Applicant(s) JEN ET AL. | |
| | Examiner Dan I Davidson | Art Unit 2651 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 February 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-35 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3-10,12-19,21-27 and 29-35 is/are rejected.
- 7) ☒ Claim(s) 2,11,20 and 28 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date <u>06/28/2002</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. The information disclosure statement filed June 28, 2002 has been received and has been considered and made of record.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1, 3-10, 12-19, 21-26, and 35 are rejected under 35 U.S.C. 102(e) as being anticipated by Egan et al (US 6,452,735 B1).

Re claims 1, 10, and 35; Egan et al disclose a disk drive (Fig. 8, 10) comprising: a controller (Fig. 5, 108, 112) comprising a processor for controlling read and write operations (Fig. 8, 112; col. 7, lines 46-47) and for receiving a thermal signal from a read channel (col. 7, lines 43-45), wherein the processor compares the thermal signal to a predetermined threshold to determine whether to initiate a re-write operation (col. 7, lines 59-65). It is implicit in a disk drive that there be a write channel and read channel.

Re claims 3 and 12; Egan et al disclose that the processor initiates the re-write operation when the thermal signal exceeds the predetermined threshold (col. 7, lines 63-65).

Re claims 4, 7, 13, 16, and 21; Egan et al disclose that the thermal signal indicates a flying height variation for a transducer (col. 7, lines 36-39).

Re claims 5-6, 14-15, and 22-23; these claims provide the result of a flying height variation in Egan et al, namely that the flying height variation will cause the higher frequency components in a signal written to media (magnetic signal; see Egan, col. 6, lines 8-9) to become attenuated resulting in unrecoverable errors when reading the written signal (this result of a flying height variation is described by Egan in the background of the invention at col. 3, lines 18-21). This is the problem that both Egan and Applicant are setting out to correct.

Re claims 8, 17, and 25; Egan et al disclose that the processor initiates a write reassign when a thermal signal exceeding the predetermined threshold is detected during the rewrite (col. 8, lines 3-10).

Re claims 9, 18, and 26; Egan et al disclose that the processor initiates a read/verify after the rewrite (col. 7, lines 65-67; in determining whether the thermally induced signal exceeds the threshold value, it is necessary to read the signal from the MR read element (see Fig. 5)).

Re claims ~~19 and 25~~ 19 and 25; Egan et al disclose a method for predicting write failure resulting from flying height modulation (col. 4, lines 41-44; col. 4, lines 53-57), comprising: initiating a write operation for writing data to a recording medium (col. 7, lines 53-54); monitoring a read channel during the write operation (Fig. 5, 106, 108); comparing a thermal signal from the read channel to a predetermined threshold (col. 7,

lines 54-56); and re-writing the data if the thermal signal exceeds the predetermined threshold (col. 7, lines 59-65).

Re claim 24; Egan et al disclose continuing the write operation when the thermal signal does not exceed the predetermined threshold (col. 7, lines 56-57).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 27 and 29-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Egan et al (US 6,452,735 B1) in view of Gong et al (US 6,683,737 B2).

Re claim 27; Egan et al disclose the method steps for predicting write failure resulting from flying height modulation (see the discussion with respect to claim 19 above). Egan et al do not disclose an article of manufacture comprising a program storage medium readable by a computer that performs the method, the medium tangibly embodying one or more programs of instructions executable by the computer to perform the method. Gong et al teach this limitation (col. 10, line 55 – col. 11, line 3)

It would have been obvious to one of ordinary skill in the art at the time of Applicant's invention to use an article of manufacture comprising a program storage medium (i.e. program product) in Egan et al; motivation being ease of providing the computer with the instructions to perform the method steps.

Re claims 29-34; the limitations at these claims correspond to the limitations at claims 21-26, respectively.

Allowable Subject Matter

6. Claims 2, 11, 20, and 28 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The prior art of record, and in particular Egan et al (US 6,452,735 B1), fails to teach or suggest that the thermal signal is a bandpass filtered signal that is tuned to the air bearing resonant frequencies associated with a predetermined drive design.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Ottesen et al (US 6,671,111 B2) teach producing a read/write inhibit signal in the event of head modulation activity.

Cross (US 6,603,617 B1) teaches monitoring for thermal decay on a disk surface, compensating for the thermal decay through raising a bias current level, and rewriting the information on the disk surface once a bias current limit is reached.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dan I Davidson whose telephone number is (703) 308-8535. The examiner can normally be reached on Mondays, Tuesdays, and Thursdays.

Art Unit: 2651

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sinh Tran, can be reached on (703) 305-4040. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

DID

Dan I Davidson
September 9, 2004



SINH TRAN
PRIMARY EXAMINER